

Schedule B SN 10/633,389

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Showing claims as amended

1. (Currently Amended) A moving fiber optical switch, comprising:

two opposed fiber supports spaced apart along an optical fiber axis, at least one of said supports being flexibly mounted for pivotal movement relative to a housing carrying the other support, said movement occurring in direction normal to said optical fiber axis,

at least one optical fiber portion fixed to each support and extending along said optical fiber axis and having opposed fiber ends forming a fiber gap, the supports having a first relative position at which said fiber ends are axially aligned, and a second relative position at which said fiber ends are held out of alignment,

link means connected to said flexibly mounted support to move said flexibly mounted support pivotally relative to said housing and the other support,

operating means connected to said link means and capable of pivotal movement relative to said housing and to the optical fiber axis, said pivotal movement occurring between two orientations, including a first orientation where the supports are in said first position, and a second orientation in which the supports are in the second position;

stop means cooperating with the operating means to define said two orientations,

and actuator means for providing said relative pivotal movement of the operating means between said two orientations[, including a first orientation where the supports are in said first position, and a second orientation in which the supports are in the second position];

wherein said optical switch is characterized in that the relative pivotal [movement] movements between the operating means and the housing and between the operating means and the flexibly mounted support [is] are both provided entirely by flexure means.

2. (Currently Amended) An optical switch according to claim 1, wherein both of said supports are flexibly mounted relative to [a connecting] said housing, and said link means includes link members connecting both of said supports to said operating means.

3. (Currently Amended) A moving fiber optical switch ~~An optical switch according to claim 1;~~

comprising:

two opposed fiber supports spaced apart along an optical fiber axis, at least one of said supports being flexibly mounted for pivotal movement relative to a housing carrying the other support, said movement occurring in direction normal to said optical fiber axis,

at least one optical fiber portion fixed to each support and extending along said optical fiber axis and having opposed fiber ends forming a fiber gap, the supports having a first relative position at which said fiber ends are axially aligned, and a second relative position at which said fiber ends are held out of alignment,

link means connected to said flexibly mounted support to move said flexibly mounted support pivotally relative to said housing and the other support,

operating means connected to said link means and capable of pivotal movement relative to said housing and to the optical fiber axis,

and actuator means for providing said relative pivotal movement of the operating means between two orientations, including a first orientation where the supports are in said first position, and a second orientation in which the supports are in the second position;

wherein said optical switch is characterized in that the relative pivotal movements between the operating means and the flexibly mounted support and between the operating means and the housing are provided entirely by flexure means,

and wherein said flexure means includes a pair of crossed cantilevers.

4. (Original) An optical switch according to claim 2, wherein said flexure means includes a pair of crossed cantilevers.

5. (Currently Amended) An optical switch according to claim 1, wherein said operating means are in the form of a ferromagnetic armature, and wherein said actuator means are electromagnetic.

6. (Currently Amended) An optical switch according to claim 2, wherein said operating means are in the form of a ferromagnetic armature, and wherein said actuator means are electromagnetic.

7. (Original) An optical switch according to claim 3, wherein said actuator means are

electromagnetic.

8. (Currently Amended) An optical switch according to claim 1, wherein one of said supports is mounted on a flexible mount which allows axial movement of said one support relative to the optical fiber axis, and wherein adjustment means is provided for causing said axial movement so as to adjust the axial width of said gap.

9. (Currently Amended) A moving fiber optical switch, comprising:

two opposed fiber supports spaced apart along an optical fiber axis, at least one of said supports being flexibly mounted for pivotal movement relative to the other support in direction normal to said optical fiber axis,

at least one optical fiber portion fixed to each support and extending along said optical fiber axis and having opposed fiber ends forming a fiber gap, the supports having a first relative position at which said fiber ends are axially aligned, and a second relative position at which said fiber ends are held out of alignment,

link means connected to said flexibly mounted support to move said flexibly mounted support pivotally relative to said other support,

and actuator means for providing movement of said link means and capable of causing said pivotal movement of said flexibly mounted support, so that the supports move between said first and second relative positions;

said switch being characterized in that a first of said supports is mounted on a flexible mount which allows axial movement of the first support relative to the optical fiber axis, and wherein adjustment means is provided for causing said axial movement so as to adjust the axial width of said gap.

10. (Currently Amended) An optical switch according to claim ~~6~~ 9, wherein said adjustment means is a screw.

11. (Original) An optical switch according to claim 10, wherein said optical switch includes a housing, and wherein said flexible mount connects a base portion of said first support to a first end

portion of the housing, and wherein said screw is located at the end portion of the housing and is positioned to act on the base portion of the first support.

12. (Currently Amended) A moving fiber optical switch comprising ~~An optical switch according to claim 1;~~

two opposed fiber supports spaced apart along an optical fiber axis, at least one of said supports being flexibly mounted for pivotal movement relative to a housing carrying the other support, said movement occurring in direction normal to said optical fiber axis,

at least one optical fiber portion fixed to each support and extending along said optical fiber axis and having opposed fiber ends forming a fiber gap, the supports having a first relative position at which said fiber ends are axially aligned, and a second relative position at which said fiber ends are held out of alignment,

link means connected to said flexibly mounted support to move said flexibly mounted support pivotally relative to said housing and the other support,

operating means connected to said link means and capable of pivotal movement relative to said housing and to the optical fiber axis,

and actuator means for providing said relative pivotal movement of the operating means between two orientations, including a first orientation where the supports are in said first position, and a second orientation in which the supports are in the second position;

wherein said optical switch is characterized in that the relative pivotal movements between the operating means and the flexibly mounted support and between the operating means and the housing are both provided entirely by flexure means,

and wherein a second of said supports is mounted on [a] said housing by means of a flexible mount which allows tilting motion of said second support relative to a first support in a direction perpendicular to the movement provided by the pivotal movement of said flexibly mounted support, and wherein there are provided adjustment means for causing said tilting movement and thereby adjusting the alignment of the optical fiber ends.

13. (Currently Amended) An optical switch according to claim {6} 2, wherein a second of said supports is mounted on a housing by means of a flexible mount which allows tilting motion of said

second support relative to a first support in a direction perpendicular to the movement provided by the pivotal movement of said flexibly mounted support, and wherein there are provided adjustment means for causing said tilting movement and thereby adjusting the alignment of the optical fiber ends.

14. (Currently Amended) A moving fiber optical switch, comprising:

two opposed fiber supports spaced apart along an optical fiber axis, at least one of said supports being flexibly mounted on a housing for pivotal movement relative to the other support also mounted on said housing in direction normal to said optical fiber axis,

at least one optical fiber portion fixed to each support and extending along said optical fiber axis and having opposed fiber ends forming a fiber gap, the supports having a first relative position at which said fiber ends are axially aligned, and a second relative position at which said fiber ends are held out of alignment,

link means connected to said flexibly mounted support to move said flexibly mounted support pivotally relative to said housing and said other support,

and actuator means for providing movement of said link means and capable of causing movement of said flexibly mounted support, so that the supports move between said first and second relative positions;

said switch being characterized in that a second of said supports is mounted on said housing by means of a flexible mount which allows tilting motion of said second support relative to a first support in a tilting direction perpendicular to the movement provided by the pivotal movement of said flexibly mounted support, and wherein there are provided adjustment means for causing said tilting movement and thereby adjusting the alignment of the optical fiber end portions.

15. (Original) An optical fiber switch according to claim 14, wherein said adjustment means include a screw trapped between said flexible mount and an adjacent part of the housing, said screw being arranged to travel in said tilting direction to cause distortion of said flexible mount in such manner as to vary the tilt of the said second support.

16. (Original) An optical fiber switch according to claim 15, wherein said adjacent part of the

housing is a leaf spring held at its sides and having a central portion capable of flexing towards the end of the housing.

17. (New) A moving fiber optical switch, comprising:

two symmetrically opposed fiber supports spaced apart along an optical fiber axis, each of said supports being flexibly mounted for pivotal movement relative to a housing carrying the two supports, said movement occurring in direction transverse to said optical fiber axis,

at least one optical fiber portion fixed to each support and extending along said optical fiber axis and having opposed fiber ends forming a fiber gap, the supports having a first relative position at which said fiber ends are axially aligned, and a second relative position at which said fiber ends are held out of alignment,

link means connected to each said flexibly mounted support to move said flexibly mounted support pivotally relative to said housing and the other support,

operating means in the form of a lever connected to said link means and having a fulcrum positioned between the connections of the lever to the link means, said lever being capable of pivotal movement relative to said housing and to the optical fiber axis between two orientations, including a first orientation where the supports are in said first position, and a second orientation in which the supports are in the second position,

electromagnetic actuator means for providing said relative pivotal movement of the lever between said two orientations, and

stop means limiting movement of said lever to define said two orientations,

said actuator means and stop means operating on outer portions of said lever, which outer portions are situated outwardly from said link means so that said actuator and stop means have a mechanical advantage over the link means;

wherein said optical switch is characterized in that the relative pivotal movements between the operating means and the housing at said fulcrum, and between the operating means and the flexibly mounted support, are both provided entirely by flexure means.

18. (New) An optical switch according to claim 17, wherein said flexure means at said fulcrum is

provided by a pair of crossed cantilevers.

19. (New) An optical switch according to claim 17, wherein said operating means is a ferromagnetic armature, and wherein said actuator means are electromagnetic.

20. (New) An optical switch according to claim 17, wherein one of said supports is mounted on a flexible mount which allows axial movement of said one support relative to the optical fiber axis, and wherein adjustment means is provided for causing said axial movement so as to adjust the axial width of said gap.

21. (New) An optical switch according to claim 17, wherein a second of said supports is mounted on said housing by means of a flexible mount which allows tilting motion of said second support relative to a first support in a direction perpendicular to the movement provided by the pivotal movement of said flexibly mounted support, and wherein there are provided adjustment means for causing said tilting movement and thereby adjusting the alignment of the optical fiber ends.